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ARE SAVINGS INCOME?

IRVING FISHER.

It is but natural that the heretical views contained in my book, "The Nature of Capital and Income",[1] should have aroused criticism, but I confess I have been surprised at the manner in which this criticism has been distributed. Many of the views expressed to which resistance was expected have been accepted, while some of those which seemed beyond debate have been among the first to be questioned. The most striking instance of the latter is found in the case of the thesis that an increase in the value of capital is not a part of income. This has been a cherished heresy of mine since it was first stated[2] in 1897.

I realize that increments of capital, or "savings", are often regarded as income both by economists and business men. Edward Cannan has specifically stated that the income of a nation during any given period consists of two parts, the first being the sum of goods enjoyed by the community during the given period, and the second, all additions to capital during that period. Accountants often, if not usually, reckon income on the same basis. The burden of proof, therefore, rests with those of us who deny that savings are income. The object of this paper is to justify this negation.

We may pause here to explain the senses in which terms will be used. The phrase capital-goods is used in the sense of any stock of wealth or property existing at an instant of time. The value of such a stock is called capital-value. The term "capital" is used as an abbreviation of *capital-value.* In the same way the phrase income-services is used in the sense of any desirable events which occur by means of capital goods during any given period. The value of these services is called income-value. The term "income" is used as an abbreviation for *income value.* Finally the term "savings" during any period is used to signify the increase in capital value in the period under consideration.

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[1] New York (The Macmillan Co.), 1906.

[2] "The Rôle of Capital in Economic Theory", *Economic Journal,* December, 1897, pp. 532-3.

If these definitions are adopted, the question "Are savings income?" would seem to answer itself in the negative. We have, however, no desire to avoid an issue by framing definitions. The issue which we have to discuss is more than a verbal one, and cannot be escaped by recourse to definitions. The adoption of the definitions just formulated for capital, savings, and income, merely obliges us to restate the question. If we employ these definitions, the question, "Are savings income?" used as the title of this paper, while it has the merit of brevity, is not accurately stated. As a more accurate formulation, we may substitute the following questions: In what respect are savings and income alike? In particular, are they alike in their relations to capital? We know that capital is the discounted value of expected income. Is it true that capital is also the discounted value of expected savings? If so, is the discount process applied to savings in the same way as to income? Or do we need to distinguish carefully between the discount process as applied to savings and the discount process as applied to income?

I maintain that savings are not discounted in the same way that income is discounted. My opponents maintain that they are. This is the real issue between us. To separate still more clearly the essential issue from all questions of terminology, the question under debate may be expressed without using the term "income" at all, thus: *Is an expected increase in the value of capital discounted in the same way that the expected services of capital are discounted?* To this question I answer, no. My opponents, if I understand them, answer, yes.

It is granted that "savings come out of income". But we shall avoid misunderstanding if we add that the phrase "savings come out of income" is not to be taken in the sense that savings were first income and afterward became capital. On the contrary, these savings always were, and still remain *capital.* They are "saved" from becoming income. *Savings come out of income in the sense that whatever amount is saved diminishes current income by just that much.* It is contended that savings, coming out of income, cannot be *in* income. Those who regard savings as taken out of income and yet as still a part of income are guilty, we believe, of a species of double counting and of a confusion between capital and income.

A few examples will serve to illustrate the issue which has now been drawn. A man owns a forest, newly planted. It cannot give him any income by yielding lumber for perhaps twenty years. During this period the value of the forest will gradually rise as the time for cutting approaches. If the rate of interest is five per cent. and we suppose the yield of the timber land to be certain, the accumulation of value will take place at five per cent. per annum. If the land is regarded to-day as worth $100,000, it will, under these conditions, become worth $105,000 at the end of a year, and will continue to accumulate at 5 per cent. compound interest until the time of cutting arrives. Those who maintain that savings and income are indistinguishable point out that the holder of the land worth $100,000 may, at the end of the year, realize an increment value of $5,000 by selling a part of his land, or by selling all of it and reinvesting the original principal. "Why, therefore", they ask, "should we not count the $5,000 added to the capital value as true income?" Another example is that of a bond increasing in value between interest payments, or that of a deferred annuity, or, simplest of all, that of a savings-bank account accumulating at compound interest.

In all these cases, and many others which might be cited, my critics maintain that the annual accretion in the value of any capital-goods should be regarded as indistinguishable from and as part of the income from that capital. It is with this thesis that I take issue. I contend that an increase of capital value, as long as it remains a part of the capital and is not detached from it, is capital and not income in the sense that it can be discounted as other income is discounted.

It is important to observe at the outset that, although income is produced by capital, the value of capital is, paradoxically, produced by the value of income. We may say that apples are produced by an orchard, but we cannot say that the value of the apples is produced by the value of the orchard. On the contrary, the value of the orchard is produced by the value of the apples. In other words, when we have to deal with the *values* of capital and income and not their *quantities,* we have to reverse the order of causation. Capital value is always the discounted value of expected income. It follows that the increase in the value, during any period, of an orchard, a forest, a bond, an annuity, a savings-bank account, or any other property or wealth, constitutes "savings" in the sense we have given to that term. This increase in value is due to the progressive approach of the time in the future when the orchard is expected to bear apples, the forest to yield timber, or in general the property or wealth to yield up its benefits or services. It is the gradual approach of future services which causes the value of any instrument to rise. Moreover, this cause—the approach in time of expected benefits from capital-goods—is the only cause for an increase in its value which we need to consider here. Other causes, such as the influence of uncertainty, are not under discussion. We may assume, therefore, to simplify the discussion, that there is no uncertainty about the future yield of capital and no change in the rate of interest by which it is valued.

Under these conditions, the capital will increase in value until the first item of income arrives. The orchard, for instance, will appreciate up to the time of its first crop. When this crop is detached, the value of the orchard will fall back by the value of the crop removed from it. Thereafter the value will again ascend with the approach of each succeeding crop and descend upon its removal.

The successive increases and decreases in value of the orchard may or may not be equal to each other. But whether equal or not, they must not be confounded. After reading what my critics have written on the subject, it seems to me that they have failed to distinguish between the *rise* of capital value and its *fall* when its services are rendered; and that this confusion between the rise and fall of capital is in turn due to fixing attention exclusively on the case where the principal or capital sum remains intact. We shall, accordingly, begin by considering this case. Let us therefore suppose that the orchard will yield crops, of equal value, annually and forever. The case is therefore, to all intents and purposes, the case of a perpetual annuity. Let *M N* (Figure 1) represent the value of the orchard (or other perpetual annuity) at the beginning. This is the discounted value of its expected succession of crops. As the first crop (or interest payment) approaches, the value of the capital will rise in anticipation of that crop until it (the capital value) becomes equal to *m n*; whereupon the crop *n q* is removed, and the value of the capital is restored to its original amount *m q*, equal to *M N*. The capital value then gradually ascends again until the next crop (or interest payment) is reached, and falls as the crop (or interest) is detached.

According to the concepts which I believe to be correct, income is represented in this diagram merely by the vertical lines *n q*, *n′ q′*, etc., marking the detachment of the crop from the orchard or of interest from the annuity. These detachments are the definite events or services in anticipation of which the orchard or bond has any value whatever.

Now, it is true that the value of the orchard rises between successive crop seasons by an amount exactly equal to the value of the annual crop. It would therefore seem at first almost unnecessary to distinguish between the rise and fall. The crop (or interest), it might be said, is itself the increment of value. Any sharp distinction between the ups and downs of such a curve seems at first unnecessary, if not absurd. It makes, however, a vast difference to our analysis, whether we consider the income of the orchard or the annuity to be the successive "ups" or the successive "downs" in the curve. In passing it may be noted that although in the particular case considered the "ups" and "downs" are equal, they are nevertheless not coincident in time. The significance of this difference between them will be emphasized later. At present it seems best to proceed from the simple case of a perpetual annuity with a capital value remaining unchanged from year to year to the more general case in which the orchard or other source of income yields a changing and terminable series of crops or services. In this general case the "ups" and "downs" of capital value are not even equal to each other. The case is represented in Figure 2. Here the value of the property is at first *M N*. This represents the discounted value of all the expected future income. We must, in constructing this diagram, proceed backward from the remotest point in the future at which income accrues. Let the last item of income be *a*, the next to the last *b*, and the others *c, d, e*. Through the top of the line *a* we draw a curve called the "discount curve",[3] the height of which at any point represents the discounted value of *a*, as anticipated at any time. This discount curve is drawn descending gradually toward the left until it reaches a point directly over the next to the last item of income *b*, whereupon *b* is added, and the combined height of $m'' n''$ represents the value of the capital at this earlier point of time. From n'' in turn another discount curve is drawn, $n'' q'$, until a point is reached directly over the income item *c*; we then proceed upward in the same manner to n', and descend by the discount curve to N'''; and so on, until we finally reach the point *N*, the height of which, *M N*, is the combined discounted value of all the income items *a, b, c, d, e*.

It is evident, reversing our outlook, that, as time elapses, the value of the capital will gradually rise from the height of *N* to the height of *n*, and then proceed by sudden falls and gradual rises until it reaches zero at m''', after the last available service, *a*, is rendered.

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[3] See the writer's "Nature of Capital and Income", p. 204.

Consider first the period $M\ M'$. During this period there is only a rise in the capital value, and no fall. It is certain, therefore, that, so far as this period is concerned, we cannot identify or confuse a rise with a fall. The capital rises steadily from $M\ N$ to $M'\ N'$, the actual increase being $N'\ P'$. The question at issue is whether or not $N'\ P'$ is to be regarded as income in the same manner as *a, b, c, d, e* are regarded as income. Is $N'\ P'$ discountable in the same manner as *a, b, c, d, e*?

It is clear that the capital $M\ N$ is fully accounted for by discounting the items *a, b, c, d, e*; and that if we should attempt to add to the sum of the discounted value of these items the discounted value of $P'\ N'$ also, the resulting sum would be larger than $M\ N$ and incorrect. It follows that $P'\ N'$ cannot be considered as discountable income in addition to the other items of income.

We may note here a curious pitfall which seems to have entrapped some economists. Not only are they disposed to regard the "up" of the curve as income instead of the "down", but they include in the "up" the original sum $M\ N$. If a person receives an orange grove, worth $M\ N$ because of the value of the oranges which will be afterward yielded in the items, *e, d, c, b, a,* one of my critics states that he would regard the receipt of the orange grove $M\ N$ as itself true income, and afterward the interest upon its value as additional income. In other words, he regards *all* the "ups" of the curve from M to m''' as income.

It is quite true that the aggregate sum of all these "ups" will be exactly equal to the aggregate sum of all the "downs", *a, b, c, d, e,* on the same principle that a stone, thrown into the air and falling again to the level from which it is thrown, must have risen to an aggregate height equal to its aggregate fall. Inasmuch as the sum of the "downs" is the aggregate income, it might seem that we were at equal liberty to regard the equal sum of all the "ups" as income. But this is an error; for, although the sum of all the "ups" is equal to the sum of all the "downs", their location in time is different. The "ups" always occur in advance of the "downs", and therefore the discounted value of the "ups" would be greater than the discounted value of the "downs". And, since we know that the discounted value of the "downs" is correct, it follows that the discounted value of the "ups" cannot be correct.

A wrong path, if followed far enough, will lead to difficulties. The critic above referred to, when pressed, admitted that, according to his definition of income, the bequest to a young man a few years ago of securities bearing an income of $5,000,000 a year (and for that reason valued at $100,000,000) was a bequest not only of an income of $5,000,000 a year, but also of an additional initial item of income of $100,000,000! To include, in this manner, as income the capital value of other income is not only opposed to common sense, but leads us to ask the question, How could a testator contrive to bequeath an income of $5,000,000 without at the same time unintentionally bequeathing an additional initial instalment of income of $100,000,000? To tie up his bequest in trust would not avail, for the beneficiary, though he could not spend the principal, would still be in the position of acquiring its value as an equity of $100,000,000 against the trustee.

Clearly the $100,000,000 is not income, but capital—the discounted value of income. The young man did not receive $100,000,000 of immediate income *and* $5,000,000 of income each year thereafter. He merely received an income of $5,000,000 a year, the $100,000,000 being its capitalization or discounted value. He is only half as well off as an heir to whom is bequeathed an initial sum of $100,000,000 in addition. The income accounting adopted by my critic leaves no room for this distinction. Naturally, it leads to double counting; for, if the logic is sound by which the heir is to be regarded as receiving an initial item of income of $100,000,000 as well as successive items of $5,000,000 a year forever, what is to hinder our discounting all these items of income indiscriminately, including the $100,000,000 immediately receivable, and thus obtaining $200,000,000 as the value of the young man's bequest just before the $100,000,000 is paid over to him? In fact, such a process, if permissible once, can be repeated indefinitely. Having last deduced that the heir receives an initial item of $200,000,000, we now have a series of income items, the capital value of which is $400,000,000! Evidently the fallacy of double counting, once begun, logically multiplies itself indefinitely. Additions to capital, whether acquired by gift or by saving, are not income, but the present value of income.

While I do not suppose anyone will gainsay that income must be so defined that the capital *M N* is the discounted value of the whole income, it may still seem that, in some manner, *P′ N′* is discounted in the value of *M N* and may be called income. And this is true; but the manner in which *P′ N′* is discounted is not the same manner as that in which the genuine income, *a, b, c, d, e,* is discounted. *N′ P′ is discounted instead of income, not in addition to it.* An example will make this clear. A speculator buys a piece of city real estate for $1,000, hoping it will sell later at a higher price, and not intending to make any use of the ground in the meantime. If he were asked whether or not the value of the land when he bought it included an anticipation of its future rise, he would undoubtedly answer in the affirmative, and he is right in the sense that the future increase of value is included in his discount process. But the speculator, it must be remembered, is depending on reselling the land to someone else. This may be another speculator, but ultimately there must be some owner who will use the land otherwise than by merely reselling. This ultimate use of the land is in view from the very start, and the price at which each speculator hopes to sell will be itself the discounted value of the uses to which the land will finally be put. It follows that the speculator who discounts a future rise in price is merely *re*discounting the future discounted value of the final uses of the land.

This fact is shown clearly in the diagram. The speculator who holds the property in the time interval *M M′* regards *M N* as the discounted value of *M′ N′*, which certainly includes the increment *P′ N′*. This increment is really discounted by him, as he does not look any further ahead than the point of time *N′*. But if we look beyond the point of time *M′*, we observe that *M′ N′* (including *P′ N′*) is itself the discounted value, at that point of time, of the income items, *a, b, c, d, e*. Consequently the man who pays *M N,* because he sees that the future value will be increased to *M′ N′*, is in effect discounting *a, b, c, d, e*. In short, these items of income, *a, b, c, d, e,* are discounted in two stages. In the first stage, they are discounted from the remotest point *m‴*, back as far as *M′*, the result being *M′ N′*; in the second stage this capital value *M′ N′* is in turn discounted back to *M*, the result being *M N.*

There are other respects in which the increase of capital value *P′ N′* differs from the true income *a, b, c, d, e*. One is that the location in time of this increase of value is, for discount purposes, *movable instead of fixed.* To make this point clear, let us proceed to a time later than M', namely M'', and consider in what respect $M\ N$ can be regarded as including the discounted value of the increments of capital between the points of time M and M''. There are evidently now two increments of value, the first being $P'\ N'$, the increment of value in the first period, and the second being $P''\ N''$, the increment in the second period. These two increments, together with the principal sum, are represented as $M''\ N''$, and form the total value of the capital at the point of time M''. Thus $M''\ N''$ consists of three parts, (1) $M''\ R$, the original capital, (2) $R\ P''$, the increment (equal to $P'\ N'$) accruing in the first period, and (3) the increment $P''\ N''$ accruing in the second period. But in this statement we have been forced to shift forward the first increment from $P'\ N'$ at the end of the first period to the position $R\ P''$, at the end of the second period. Without such shifting forward, it would not be true that the original capital value of $M\ N$ was the discounted value of the principal $M''\ R$ together with the discounted value of the two increments $P'\ N'$ and $P''\ N''$. The proposition is true, only on the condition that the increments for two periods are both located at the end of the second period. If a still later point of time is taken, the increments, to be discounted, must be shifted still further forward. Now this shifting of time only applies to the increments of capital value. It does not apply to genuine income items, a, b, c, d, e. In short, *genuine items of income are discounted from the times at which they accrue, whereas increments of capital are discounted not from the times at which they accrue, but from the end of the arbitrary period under consideration.*

Putting the principle in its most general form, we may say that for any arbitrary interval of time, the value of the capital at its beginning is the discounted value of two elements: (1) the actual income accruing within that interval, and (2) the value of the capital at the close of the period. This value of the capital at the close of the period may in turn be resolved into two elements, first, a part which is equal to the original value of the capital, the "principal", and second, any "net savings" during the period. In case the "savings" are negative, they are called depreciation and are subtracted. The "savings" *form merely a part of the final capital, are located at* the end of the period under consideration, and are shifted from point to point according to the length of that period.

Another distinction between savings and income is that, whereas we may postulate any one item of income independently of any other, we cannot postulate an increment of capital until we know the items of income from that capital. Its value is entirely *derivative* and has no separate existence.

In Figure 2, for instance, we can postulate separately each one of the items, $a, b, c, d, e,$ without regard to the others, but we cannot postulate the value of $P' N'$ before we have postulated the items a, b, c, d, e. There is, therefore, a profound distinction between the *primary* items $a, b, c, d, e,$ which are mutually independent, and the *secondary* item $P' N'$, which is wholly dependent on those primary items.

Still another distinction between savings and income consists in the fact that a change in the rate of interest will not change the items of income, $a, b, c, d, e,$ but will change the increments of capital, $P' N'$, $P'' N''$, etc. If the rate of interest is changed, the discount curves in Figure 2 will all be shifted. As a consequence, without any change in the items of income, *a, b, c, d, e,* there will be a change in the increments of capital.

The facts that an increment of capital is derivative from the items of income, and that it changes with the rate of interest at which these items are discounted, are the ear-marks of capital. We know that capital value is derivative from income and that it changes with the rate of capitalization.

It is clear, therefore, that M' N' is merely an intermediate capitalization of *a, b, c, d, e.* It does not, nor does any part of it, play the same rôle as do the items of income *a, b, c, d, e.* The part P' N' which represents increased value is in no way different from the rest of the entire capital M' N'. It follows that, in cataloguing the entire series of items of income from beginning to end, we cannot include P' N' as income on the same basis as *a, b, c, d, e*; for we should be guilty of double counting. To the extent that P' N' were included, we should be including part of the anticipated value of *a, b, c, d, e.* We should, in other words, be including in our enumeration of income not only *a, b, c, d, e,* but also a part, P' N', of the capital value of these same items. The former items are realized income; the latter item is merely the anticipated value of this income. The anticipated value is located at the point of time M', but the realization does not begin until the point of time m is reached. The anticipated value of income is not income, but capital. To consider *any part of capital value as income is thus to confuse* capital and income. Capital value is merely a present expression or reflection of future income. Each recipient of income has open to him two options. Any increment of his capital may be detached from the rest of the capital, and this event of parting company will then constitute an item of income. Or, reversely, the increment may be "saved". That is to say, it may be saved from being detached from capital. In this case it remains capital, and the income which otherwise would have emerged by detachment fails for the present to emerge at all. In place of it we have the savings—the present value of more income in the future.

These two options, to use income or have savings, are mutually exclusive. "You cannot have your cake and eat it, too", is an old adage which stands for one of the profoundest of economic truths. This truth is that savings and income are not coincident, but alternative. Any increase of the one is at the expense of the other. Savings are savings because they have not been detached from capital, but remain attached. Income issues by detachment. The bondholder values his bond by discounting each coupon from the time at which it is to be detached. A fruit tree is valued by discounting the fruit from the time it is to be picked; a farm by discounting the crops from the time when harvested. We do not need here to *inquire what becomes of the detached coupon, fruit, or* crop. They may still go to swell capital in some other category. The coupon may be reinvested in another bond; the fruit may enter into the capital stock of a merchant; the crops may become part of the accumulation in a granary. Thus the income from the bond, the fruit tree, or the farm may be invested as expense for purchasing or otherwise acquiring capital other than the capital from which they sprung. The point for us to observe is that, so far as the original or parent capital is concerned, the time of detachment marks at once the yield of a certain amount of income and the cessation of an equal amount of capital out of the parent stock. The detachment of a $5 coupon is an event which constitutes an income of $5 from the bond and which instantly reduces the value of the bond by

$5. The detachment of each dollar's worth of fruit from the tree or of crops from the farm means a dollar of income and a deduction of a dollar from the value of the tree, or the farm. Contrariwise, if for a time the coupon, the fruit, or the crops remain attached to the bond, the tree or the farm, they then remain a part of the parent capital and the income which would otherwise have been realized is held back. We must distinguish sharply between detachment from and attachment to capital, and we must remember that they are mutually exclusive. So long as an item remains attached to capital, it is not income; when it is detached, the event of its detachment is income. No principle in economics is more inexorable than this. By no sleight of hand can we escape the dilemma in theory which confronts every capitalist in practice. Either he can take out a dollar's worth of income or save a dollar's worth of capital, but he cannot do both. His savings "come out" of income to make capital, but for that very reason they are capital, not income.

The fallacy of including savings under income has been expressed both as a confusion between capital and income and as a double counting of income. Savings are simply the capitalization of future income. If a man saves capital he is not only diminishing present income, but increasing future income. The upshot of the whole matter, therefore, is that "savings" imply a change in the "time shape" of an income stream, viz., (1) a decrease of present income, and (2) an increase of future income. What is subtracted from present income is added (with interest) to future income. But the future addition cannot occur without the present subtraction. The savings must actually come out of present income. They come back to income in the future only. To regard savings which are reinvested for the sake of future income as still constituting a part of the present income, is to assume a future return without a present sacrifice. Savings mean a lessening at one point of time and an increase at another.[4]

In the last analysis, therefore, the two options which constitute the dilemma of the investor are choices between two different income streams. If he "saves", he thereby chooses an income stream smaller than it would otherwise be in respect to present income; larger in respect to future income.

Let us consider the case of a bank depositor who allows his account to accumulate at compound interest. If he has $100 at the start, at the end of the year he will have $105. It is quite true that he might receive the $5, detaching it from his principal. He might also redeposit the same. In the following year, when his interest is $5.25, he might go to the bank and again go through the ceremony of receiving and redepositing. It may be asked, Would we not, under these circumstances, be compelled to say that this man was actually receiving the income from his capital even while he was allowing it to accumulate? To this the obvious reply is that he received income when it was handed to him across the teller's counter, but he suffered an outgo when he pushed it back and added it again to the principal sum. The process of detaching the interest was income from the capital in bank. The process of reattaching it to capital was the opposite, and must be called outgo, to be debited to that same capital. Since these two terms are equal, opposite and simultaneous, they evidently efface each other completely. The conclusion is, therefore, that when capital is accumulating we cannot regard it as yielding income unless in the same breath we regard it as cancelled by an equal outgo.

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[4] The significance of this fact in the theory of interest is emphasized in my "The Rate of Interest", New York (The Macmillan Company), 1907.

The need to make such cancellation cannot be evaded by the device of placing the savings withdrawn in some other institution. In that case our accounts would show that the original savings bank did actually yield income to the extent to which annually the interest was detached, but that the other institution must be debited with the corresponding items as outgo. Each institution must be treated independently in this accounting. The person who held the deposit would not be receiving the benefit of his income, because he would be out of pocket by an exactly equal amount for the other institution into which he has put the savings. One institution has given him income; the other has occasioned him expense.

The fallacy that savings, though taken out of income to form capital, are still regarded as income, is due, oddly enough, to the usages of accounting. Business men and bookkeepers delight in conforming all accounts to a fixed norm, in which capital is regarded as invariable and income as a perpetual annuity. In economic theory we find the same tendency in many economists, notably Prof. J. B. Clark, whose very concept of capital postulates its perpetual reconstitution or upkeep. In the actual world there is not and cannot be any case of absolute immutability of capital value and perpetuity of income. Surely our theories of capital and income should admit the variability of both capital and income. But the bookkeeper prefers to make the fiction of invariability even when there is actual variability. In fact this fiction is of great convenience for bookkeeping purposes; it enables us to compare every condition with a fixed standard. No objection is offered here to the practice as a practice. The objection is to conceiving a mere bookkeeping fiction as an economic reality.

If there be detached from capital a sum more than equal to the increment of value during a stated period, the bookkeeper says that "the capital" has been trenched upon or "the income" has been exceeded. By the "capital" he means the original capital *supposed* to remain intact, and by the "income" he means also a *supposed* income, viz., that which would leave the capital unimpaired.

Thus, in Figure 2, if we consider the time interval $M'' m$, we find that the increase of value is $n\ p$, but the income detached is $n\ q$, which "trenches upon capital" by the sum $p\ q$. This depreciation of capital $p\ q$ is by bookkeepers deducted from the total realized income $n\ q$, in order to find the normal or standard income $n\ p$, that is, the income which, if realized, would leave the capital intact. But we must not fail here to note that if the sum $p\ q$ is really taken out of income, or reattached to capital, and thus used as a depreciation fund, it will necessarily transpire that the diagram in Figure 2 will be materially altered subsequent to the point p. It will in that case not descend to q, but begin ascending from p along a different "discount curve".

There is, therefore, a vast difference between *reckoning* a depreciation fund and actually sacrificing it. Only in the latter case can we say with literal truth that income does not trench on capital. Yet bookkeepers keep up the fiction that income does not trench on capital by the simple device of refusing the name income to that part which so trenches. Under this fiction the income from a fund of capital can never vary from the computed interest upon that fund. I have adopted the phrases "standard income" or "earned income" or "earnings" to designate the income which leaves capital intact. The phrases suggest that the magnitude to which they apply is not actually realized income, but an ideal or hypothetical norm by which we measure the actual income and the deviation from which in one direction or the other registers the depreciation or the "savings". If actual income exceeds standard income, the excess is depreciation. If the reverse is true, the deficiency constitutes "savings". The case of depreciation has been illustrated in the diagram in the time interval $M''\ m$. The case of savings is illustrated in the time interval $M'''\ m'$. Here the increment of capital, before the income $n'\ q'$ is detached, is $p'\ n'$, leaving $q'\ p'$ as the net increment or "savings". In this case the bookkeeper adds the increment of capital to income, under the fiction that it would be possible to detach this additional sum "without trenching upon capital". This is true, but possibilities are not actualities, and an item is not made income merely because it might so be used. So long as $p'\ q'$ is *not* detached, but remains attached, it is capital and capital only. It is "earned income" because it *could* be detached and leave the capital intact, but it is not realized income, or what we have called, for short, simply "income".

Adopting, then, the foregoing terminology, we may state that capital is discounted income, but not discounted earnings. It is true that capital is the discounted value of *present earnings assumed to continue perpetually in the future.* But this proposition is highly hypothetical. We have already seen that even present "earnings" is a hypothetical magnitude. The above proposition adds another hypothetical condition that this hypothetical magnitude shall continue unchanged forever. Only by means of these hypotheses are we enabled to state that capital is discounted earnings or capitalized earnings. Our result

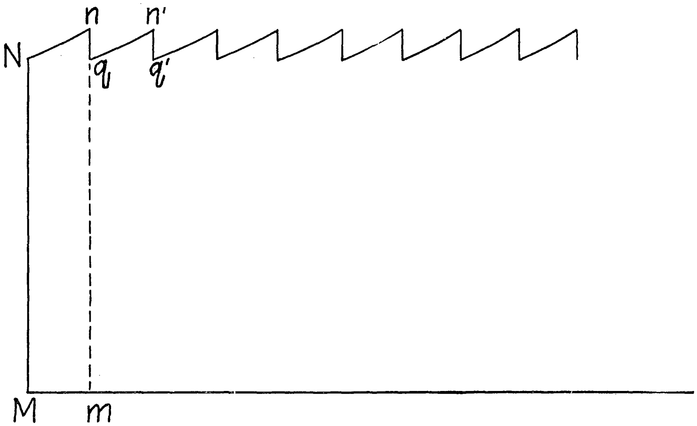

Fig. 1

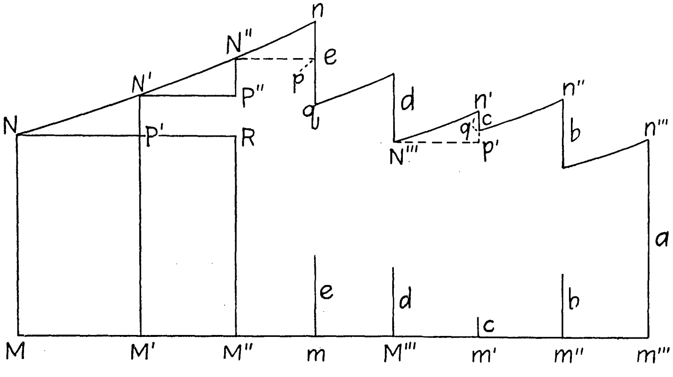

Fig. 2

is therefore that (1) capital is the discounted value of expected income—actually realized income, however variable,—and (2) it is the discounted value of present earnings supposed to continue perpetually. In other words, capital is the present value of either of two income streams, one, the real and variable income stream, and the other an ideal perpetual annuity. The ideal perpetual annuity is the bookkeepers' substitute for the real income to which it is equivalent.

A practical example of the fallacies concerning savings, earnings and income is found in assessing income taxes.

It is not intended to discuss here the practical advisability of any particular system of taxes; but, supposing, for the sake of illustration, that there exists in a community a uniform system of income taxes, it is obvious that it makes a difference whether these income taxes are assessed upon "earnings" or upon "income".

Let us imagine (as in my book *The Nature of Capital and Income*) that there are three brothers, each of whom receives the same legacy of $10,000, and that interest is 5 per cent. The first brother invests his $10,000 in an annuity of $500 a year forever. The second puts his in trust, to accumulate at 5 per cent. until it has doubled in value, which will be in about fourteen years, after which it is invested in a perpetual annuity of $1,000 a year. The third, having spendthrift tendencies, buys an annuity of $2,000 a year, which by actuarial calculation will last him a little less than six years.

Evidently, if we tax income, the first brother will be taxed on a perpetual income of $500 a year; the second will not be taxed for fourteen years, but thereafter will be taxed on an income of $1,000; while the third will be taxed on an income of $2,000 a year for six years, and thereafter will have no income and no tax.

On the other hand, if we tax earnings, we shall tax the first brother to the same extent as before, but the second and third will be taxed very differently. The earnings of capital of the second brother, instead of being nothing for fourteen years, is $500 in the first year and $525 in the second year, etc. The third brother, who during the first year took out $2,000 from his capital, would, according to the same method of reckoning, need to deduct from this sum the $1,500 which represents the amount that he would "trench upon his capital", leaving $500 as his earnings. At the beginning of the second year, this same third brother would possess a capital of only $8,500, the "earnings" of which would be only $425. Thus his earnings progressively diminish until in the sixth year they are only $90. The capital having then been destroyed, no earnings remain.

If now a tax of 10 per cent. were laid on the income of the three brothers, we shall see that it would be a just tax, but that if it were laid on earnings, it would be an unjust tax.

Consider first a 10 per cent. tax levied according to *income*. The first brother would pay 10 per cent. on his annual income of $500 a year, or $50 a year forever. The second would pay no taxes for fourteen years, after which he would pay taxes of $100 a year forever. The third would pay a tax of $200 a year for six years and thereafter nothing.

If, in the supposed community, it is possible to "compound" for taxes by paying in advance a sum which represents the discounted value of the taxes, a little consideration will show that each of the three brothers could compound for his taxes for $1,000; as this sum is the discounted value of the first brother's tax for $50 a year forever, of the second's tax of $100 a year, beginning

15 years hence, or of the third brother's $200 a year for six years.

Applying the tax of 10 per cent. to earnings, on the other hand, the first brother would pay the same taxes, $50 a year, as in the previous case; the second would pay not only the $100 a year beginning in fifteen years, but also in the intervening 14 years he would have to pay a *progressively increasing tax beginning with* $50. Evidently this tax is far more burdensome than that on income, and if the brother should "compound" for it, he would need to pay a much higher sum, namely, $1,714. The third brother, on the other hand, would need to pay a tax on the first year of only $50, this being 10 per cent. of the earnings; in the second year he would pay $42.50, and so on, in sums decreasing to the last or sixth year. He could compound for these small amounts for only $158. Evidently the burden of taxes on the three brothers who started out with equal properties would be, under this system of taxes, very unequal. An "income" tax would be just, and an "earnings" tax unjust.

It is true that we are not therefore obliged to use the term "income" in the sense in which I employ it. But the example shows that the concept which I call "income" is so fundamental as to afford the basis for a theoretically just system of taxation, whereas the substitution as a basis of taxation of the concept which I have called "earnings" affords a basis for an unjust system. The question has been often debated whether "savings" ought to be taxed. Our example shows that in ideal justice they ought not. The contention that they ought to be taxed is, I cannot help but think, due to the notion, fostered by a bad terminology, that savings are income.

The question of whether we should use the term "income" in the sense of earned income or in the sense of realized income, is purely a verbal one and is of small consequence. But even this verbal question may properly engage our attention for a moment. One reason that I personally prefer to use the term "income" when employed alone to signify realized income is that the term earnings cannot be used in the sense of realized income. Therefore if we are to allot to our two concepts (real and ideal income) the two terms, earnings and income, and if earnings can be used only for one of these two concepts, the ideal, there is no choice but to apply the term income to the other. Another and more important consideration is that, given the two ideas, one referring to income which is realized or actual and the other to income which is earned or potential, it would seem that the basic term income should be preferably applied to what is real rather than to what is hypothetical. We have seen that the two concepts called earnings and income are not independent, but that the concept of "earnings" is dependent upon that of "income". The fundamental term income seems to befit best the more fundamental of the two concepts. The concept of earnings is a compound concept. It is compounded out of the concept of income and the concept of capital, for it signifies the sum or difference of two magnitudes, viz., the actual income and the savings (or reverse) which are a change in *capital.*

Questions of terminology can never be satisfactorily settled. Popular usage is almost always inconsistent. Thus the very people who think income must be exclusive of any depreciation of capital will nevertheless include in income the whole of an annuity, especially a life annuity. But it is evident that if a man purchases a terminable annuity, his property will gradually depreciate; each item of the annuity received is eating up the value of his capital, until at the end of the terminable annuity it is all gone. Of course precisely the same principle applies in the case of any article of capital with a limited life, such as a dwelling-house, or an automobile, or a piano. In all cases depreciation funds do not diminish income unless they are actually paid. In the case of a laborer, his wages constitute a terminable annuity and there must needs be a progressive depreciation of their capitalized value; yet he usually regards all his wages as income. In this case depreciation is not deducted because it is not calculated. Accountants do not capitalize labor power, and therefore their bookkeeping fictions do not enter into the problem of whether or not a *laborer's wages are income.*

Again the common phrase that a man is "living beyond his income" is variously interpreted. It may mean, translated into our terminology, that his realized income exceeds his earned income, or that his realized income exceeds his money income even when the latter is in wages or other terminable form.

We may summarize our results in the following propositions:

(1) Savings mean the rise of the curve of Figure 2 indicating the course of capital value. Income means its fall.

(2) The alternate savings and income, or rise and fall, are not necessarily equal.

(3) Even when they are equal, as in the case of a perpetual annuity, they are not coincident in time nor do they have the same discounted value.

(4) Any value of capital (such as $M' N'$) in Figure 2, is the discounted value of all its future income (such as a, b, c, d, e,), including no savings nor anything else whatever.

(5) The rise or increase of capital value in any

period may be discounted to form present capital value provided (1) it is discounted *instead of* income beyond that period and not in addition to it, and provided (2) it is shifted forward out of its actual place to the end of that period. In this case the capital value at the beginning of the period is the discounted value of the income realized within this period plus the discounted value of the capital value remaining at the close of the period (including therein any increments or savings).

(6) The rise of capital value (or savings) has no existence independently of expected income. Its value depends upon and shifts with (a) the expected income and (b) the rate of interest.

(7) When alternate savings and income or the rise and fall of the curve are not equal, bookkeepers usually make the fiction of equality by adding to the actual income any addition to capital (savings) or subtracting any deductions from capital (depreciation).

(8) This corrected or doctored income I prefer to call not income, but earnings. The concept of earnings is not independent of income but a compound of the two concepts of income and capital. Income, earnings, and savings (or the reverse of savings, depreciation) are three separate concepts of which the first is fundamental and necessary to the understanding of the other two.

(9) Capital is discounted or capitalized earnings only in the sense that the earnings of future years are assumed to keep up at the present rate.

(10) Even if different names be given to the foregoing concepts—if for instance the name income be given to the concept which we have designated as earnings and some other name be substituted for our term "income"—the three concepts and their relations to each other and to

capital will not be affected; they will merely be differently expressed.

(11) But if such a terminology be adopted (*i. e.* "earnings" be called "income"), we have left no term which has yet been suggested to apply to the first concept which I have called "income". Inasmuch as this concept is the fundamental and important one, it surely deserves a fundamental and important name. This basic concept, moreover, seems as near to the popular idea of "income" as we can attain and still observe the rules of scientific definition. If it be true that so fundamental a concept has thus far gone unnamed, this fact must be interpreted as indicating that the fundamental theory of discounting this unnamed magnitude to obtain capital value has never been clearly understood. The concept is unnamed because unappreciated. As soon as we perceive its important rôle, we must needs christen it. Personally I care little how we christen it if only its rôle and relation to capital, and to what has been called earnings and savings, are clearly understood. Such clear understanding is unfortunately not as yet a realized fact among students of the subject.